

# **The Virginia Department of Environmental Quality**

Construction & Demolition Materials  
Management January 2009 Report &  
Directory



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## EXECUTIVE SUMMARY

Construction and Demolition (C&D) debris is a general classification for the solid waste that results from residential or commercial construction and renovation projects, public or private infrastructure projects such as roads, bridges or building construction or demolition, and the occurrence of natural disasters. The most common items and materials that fall under the C&D category include concrete, brick, block, wallboard, cardboard, shingles, asphalt, wood, carpet, and ferrous and non-ferrous metals.

As the world becomes more aware of and sensitive to environmental impacts of human activity, one of the most significant trends that has developed in the twenty-first century is a growing commitment to “Sustainable” or “Green Building” initiatives. These initiatives approach building and infrastructure design and construction projects with the goals of maximizing the use of recycled products in the construction or renovation of the facility or structure, minimizing waste created and energy consumed as a result of the ongoing operation or use of the facility or structure; and the reduction, reuse or recycling of most, if not all, of the materials that remain after demolition of the facility or structure.

Subsequently, there is a growing demand for C&D waste collection, handling, acceptance, disposal, processing, and recycling services. Virginia’s local, regional and state entities have implemented various solutions for providing these services to its residents and businesses. In addition, numerous private enterprises have been established to satisfy the expanding need for C&D debris management. The C&D materials management industry continues to grow and change as environmental regulations and trends continue to develop.

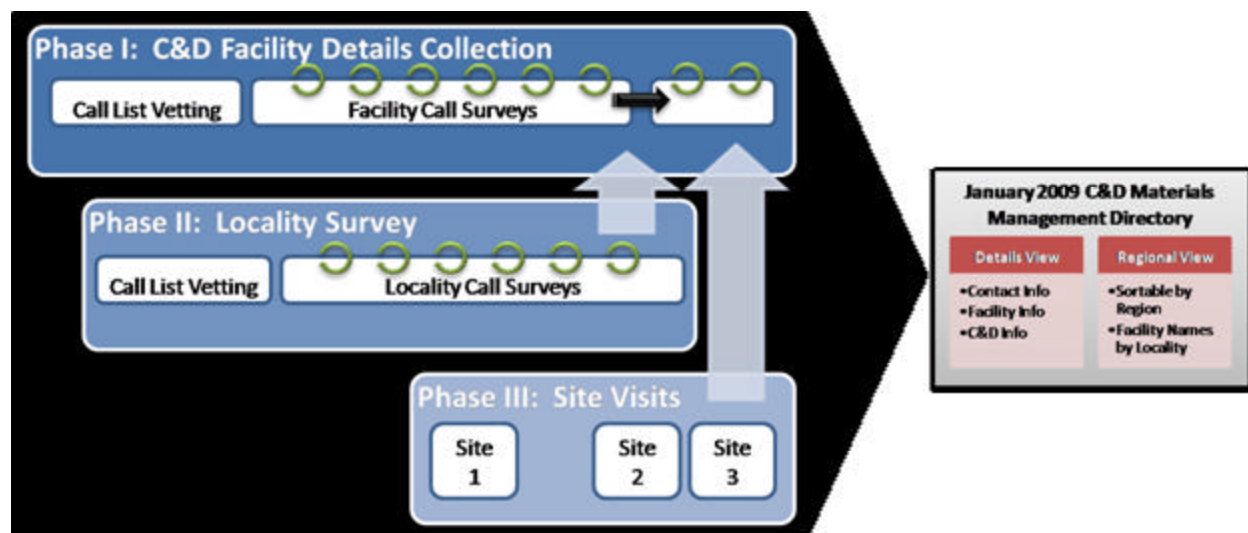
To that end, Virginia’s Department of Environment Quality (DEQ) has embarked on an effort to better understand how C&D materials are managed throughout the state, and to quantify and qualify the options available for Virginia residents, government entities, and commercial enterprises for responsibly handling C&D material. Specifically, this effort involved three phases of research:

- 1) Surveying each permitted C&D operation on DEQ’s list of permitted operations to update facility information, and solicit details on the C&D materials management services available at each site
- 2) Surveying each County and City to identify the jurisdiction’s available C&D management facilities
- 3) Performing site visits to “progressive” C&D materials management facilities within the state to document the range of materials processed and share valuable information on the state-of-the-art technologies and processes used for C&D materials management

The four-month effort involved placing over seven hundred fifty (750) phone calls, contacting nearly three hundred (300) facilities and one hundred thirty-five (135) counties and cities, conducting visits to and interviews with four (4) C&D management facilities, and referencing numerous open-source internet resources to compile a myriad of C&D material management information specific to Virginia. The results of the research project are presented in this report, which includes a summary of our research process, our research findings and summary statistics, accounts of each of the site visits that were conducted, a summary of lessons learned and recommendations for expanding knowledge and understanding of C&D material management within Virginia, and our compiled, searchable directories of Virginia’s C&D materials management facilities.

## RESEARCH PROCESS

Through each phase of the research project, we took an organized approach that allowed us to build upon the information we had collected, and allowed us to adjust our approach as we learned techniques that were most successful. Each phase presented a series of challenges, as defined below. Analyzing these challenges, and the lessons we learned in overcoming them, led to a series of recommendations that we presented later in this report.



### ***Phase I: C&D Facilities Details Collection***

**Call List Vetting** -- Our first phase of research involved contacting each of the facilities on DEQ's permitted solid waste facility list (<http://www.deq.virginia.gov/waste/s-waste.html>) to solicit details of each facility's C&D management services and processes. Prior to embarking on the call survey activities, we conducted a full vetting, clean-up and de-duplication of the original list in order to provide an accurate "call list" from which to begin our survey. This preliminary list clean-up activity was important and necessary to address several of the challenges we faced in using the DEQ list as our originating source.

One of the challenges we faced was the abundance of outdated contact name and telephone number information. We primarily utilized the internet to augment the information provided in the list and to cross-check and update a majority of the contact phone numbers and contact names provided in the original list to overcome this challenge. A second issue we encountered was the non-standardized naming convention used in the original list. The original list recorded facility names in an inconsistent fashion, listing some facilities by their local nickname or pseudonym, others by their location, others by their formal permitted name, and still others by the name of the company that managed or owned the operation. We addressed this challenge by implementing a standardized methodology for logging a formal facility names and all associated "other" names a facility is known by. A final challenge that we faced in the first phase of our project was that the source list included *all* permitted solid waste facilities, not just those involved in C&D management. We filtered the list down to those relevant to our project through a combination of preliminary internet research and phone calls to those facilities most obviously not involved with C&D materials management (for example, those whose name indicated a specialization in hazardous waste management or contaminated soil treatment).

While a time-consuming preliminary process, the benefit of vetting the initial list before embarking on the call survey portion of this activity was twofold: to minimize the number of superfluous calls made, and to avoid interrupting busy facilities with matters unrelated to their business.

**Call Survey --** Once our call list was finalized, we began contacting each of the facilities on the list. As part of our approach, we defined a standardized call script such that we were consistent in the questions we asked, as well as consistent with the messages that were left and in our requests for call-backs. This portion of the project faced two significant and time-consuming challenges. The first was the unexpectedly layered network of people we needed to work through, on a per facility basis, in order to identify the name and direct phone number of the ultimate person with the authority and knowledge to answer our survey questions. The second was actually making telephone contact with the POC. Reaching the proper POC, in many cases, required repeated voicemail messages and phone calls at varied times and on varied days in order to achieve a person-to-person contact. We completed our call survey through a comprehensive sweep of the call list, plus repeat calls up to a minimum of five (5) contact attempts per POC. While there were only a few POCs we were unable to reach at all, those that were unreachable are noted in the directory as such, and are augmented with any and all facility information that could be confirmed via internet research.

### ***Phase II: Locality Survey***

**Call List Vetting --** Our second phase of research involved contacting each of the Counties and Cities in Virginia to solicit the names of the public and private facilities that provide C&D material management services for the residents and businesses of each respective locality. Prior to embarking on the call survey activity, we again created a source "call list." The primary source for contact names and numbers was the hard-copy 2006/2007 County & City Directory provided by Mr. Coe. For each county and city we first searched the directory for a point-of-contact (POC) serving in the role of Supervisor, Director or Manager overseeing any division or office related to solid waste management, landfills or public works. If no such department or office existed for the locality, we referenced the County or City Administrator.

**Call Survey --** Once our call list was defined, we began contacting each of the POCs on the list. One of the most significant challenges we faced in this phase of the project was similarly, an abundance of outdated contact name and telephone number information. Up to one-third of the contact information provided in the directory referenced people no longer holding the position listed and/or phone numbers that were no longer in operation. To address this challenge, we utilized a combination of internet research to identify updated contact names and numbers, and by directly calling the County or City Administrator and then traversing through a series of transferred calls and referrals to reach the appropriate person with the authority and knowledge to speak on behalf of the locality.

### ***Phase III: Site Visits & Interviews***

Our third phase of research involved identifying and visiting three (3) facilities to conduct site surveys. The target sites were determined through consultation with Mr. Steve Coe, who provided final approval on the sites that could be included in the survey. The target sites were identified based on locality, volume and degree of C&D material management conducted, degree of advanced technologies and processes utilized, and willingness and availability to host a site tour. The three (3) sites decided upon are three (3) of the most progressive facilities in Virginia, representative of the full range of C&D processing and recycling technology that is available, based in several discrete regions of the state, and demonstrating both private and publicly owned and managed operations. Upon determination of the sites to be visited, each was contacted in advance to schedule a guided site tour. Whenever possible,

the site surveys were scheduled such that Mr. Coe and the Tri-Opus Project Lead could attend the site visit together to gain the benefit of dual absorption of information shared during the tour. During each site visit a standard series of questions was asked, and numerous photographs of processing activities and equipment were taken. Additionally, a follow-up telephone call was placed to each site POC to solicit final information for the site report.

We augmented our site-specific research by conducting one (1) additional facility phone interview. While we did not physically visit the site, we arranged a thirty (30)-minute phone interview to ask questions and collect data and photos similar to those compiled from the site visits. We opted to choose one additional private enterprise not yet in full operations, but in the permitting process. This addition to the required site visit list provided further detail on the most progressive and state-of-the-art C&D technology and process investments currently underway in Virginia.

## C&D RESEARCH FINDINGS

### *Summary Statistics*

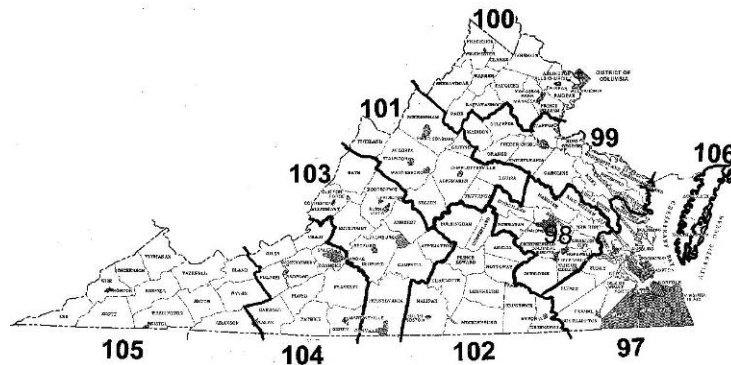
Below we present summary statistics on C&D management as a result of the over three hundred (300) facilities, and one hundred thirty-five (135) counties and cities we contacted.

#### Virginia C&D Statistics

- **135** facilities actively accepting or managing C&D debris in Virginia in some capacity
- Of those reporting, annual tonnage collected per facility ranges from **1,000 to 56,000**
- C&D tipping fees range from **\$0 to \$66 per ton**, and **\$0 to \$180 per load**
- The life expectancy of currently operating facilities ranges from **1 to 126 years**, with many reporting an "Ongoing" status
- Confirmed facilities in Virginia conducting some on-site C&D management or processing: **71**
- Facilities in Virginia sending C&D materials off-site for reuse or recycling: **17**

#### A Look by Region:

Region	Accept & Transfer C&D Only	Landfill or Dispose C&D Only	Process / Recycle C&D	Total Facilities Serving Region
97	2	6	22	30
98	4	4	12	20
99	2	3	9	14
100	2	5	24	31
101	3	3	8	14
102	2	10	11	23
103	2	3	15	20
104	2	3	12	17
105	2	4	13	19
106	2	2	6	10



## ***Site Visits & Interviews – A Detailed Look at C&D Management***

We conducted three (3) site visits to C&D processing facilities to document the range of materials received and processed, and to solicit additional detail on how C&D materials processing and recycling is conducted. We also conducted one (1) phone interview to an additional C&D materials processing facility currently in permitting to gain additional insight.

### **Site #1: Waterway Marine Terminal, Waterway Recycling, LLC (PBR #506)**

Waterway Recycling, LLC is located in Chesapeake, VA along the eastern seaboard. It operates out of Waterway Marine Terminal – a unique location along the southern branch of the Elizabeth River which allows barges easy access and the ability to dock alongside the location. The location allows Waterway to expand its geographic reach to customers all along the East Coast seeking a C&D



**Waterway Recycling 1**

material management provider. The physical situation of the facility allows large volumes of C&D debris to be delivered long distance in a relatively practical and cost-effective manner.

Waterway Recycling is progressive and on the forefront of technology as it pertains to C&D material management. Boasting twin/dual recycling lines, the facility is capable of recovering materials at a rate of 70 tons per hour (TPH). The site is permitted to operate 24 hours per day, which maximizes the facility's capacity and efficiency. Waterway in-takes the full range of C&D materials, converting the maximum amount feasible into raw recycling products for reuse.

	
<b>Address:</b>	1401 Precon Drive Chesapeake, VA 23320
<b>POC:</b>	Mr. Gene Hand, Terminal Manager <a href="mailto:gband@precononline.com">gband@precononline.com</a> (email) (757) 333-3427 (work) (757) 478-7773 (cell) (757) 333-3987 (fax)
<a href="http://www.waterwaymarineterminal.com">http://www.waterwaymarineterminal.com</a>	



**Waterway Recycling 2**



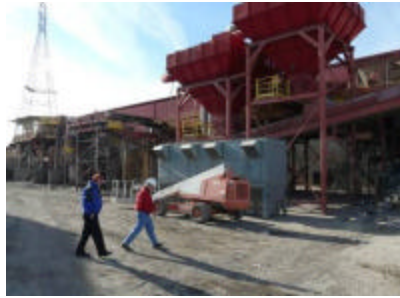
**Waterway Recycling 3**

After processing, the facility is capable of producing ferrous and non-ferrous metals, processed wood, brick, block, masonry and fine materials. Its state-of-the-art recycling lines allow not only for the separation of materials for processing at a staggering rate, but also for the recycling of the water that is used to conduct the process, further attributing to the company's commitment to full-process recycling.





Waterway Recycling 4



Waterway Recycling 5



Waterway Recycling 6

In 2008 Waterway Recycling's performance included the processing of over 80,000 tons of C&D, with 92.1% of the material being recycled. Though the facility is capable of processing and recycling the full range of C&D materials, its equipment and facility is slightly more geared toward its ability to efficiently extract and convert C&D wood-



Waterway Recycling 8

based debris into processed wood. A significant portion of their recycled product customer base pre-orders and utilizes its wood chips.

Waterway is an ideal facility to refer any commercial enterprise disposing of C&D debris resulting from predominately wood-constructed projects.



Waterway Recycling 7

The C&D Materials Management Team visited Waterway Recycling, LLC on November 11, 2008. The site visit was conducted by Mr. Joel Port, the Project Lead for Tri-Opus Technologies, and Mr. Steve Coe, the DEQ Project Sponsor.



Waterway Recycling 9



Waterway Recycling 10



Waterway Recycling 11




**Site #2: Corral Farm Processing Facility & Landfill (PBR #528, #575)**

Corral Farms Processing Facility is located in Fauquier County, Va. The processing facility is located on a 250-acre complex comprised of a sanitary landfill and C&D landfill. While located in the suburbs of a quiet town, this facility is a premier recycling center, one of only two known local-government owned-and-operated large-scale C&D waste processing and

**Corral Farm 1**

recycling facilities in the country. Further, Corral Farms is one of only a small few C&D processing centers within the state of Virginia that not only processes C&D materials, but aggressively markets byproducts for purchase.

At the heart of the facility's C&D program is a multi-million-dollar processing system, a state-of-the art technology imported from an industry-leading manufacturer based out of Canada, Sherbrooke O.E.M. Ltd. The system is comprised of apron and picking conveyors, sorting machines and granulators specifically designed for C&D processing and recycling. The facility accepts materials from both within and outside of the county, and relies on its strong, though declining, C&D processing revenues to largely support its other waste management initiatives.

 <b>Fauquier County Virginia</b>	
<b>Address:</b>	6438 College Street Warrenton, VA 20187
<b>POC:</b>	Mr. Mike Dorsey, Site Superintendent <a href="mailto:mike.dorsey@fauquiercounty.gov">mike.dorsey@fauquiercounty.gov</a> (email) (540) 347-6811 (work) (540) 341-7120 (fax)
<a href="http://www.fauquiercounty.gov/Government/departments/environmental/index.cfm?action=landfill">http://www.fauquiercounty.gov/Government/departments/environmental/index.cfm?action=landfill</a>	

**Corral Farm 2****Corral Farm 5****Corral Farm 4****Corral Farm 3**

One of the more advanced technologies applied at Corral Farms is the landfill gas (LFG) collection system – a technology that harvests methane gases created by the landfill for resale to Virginia's Old Dominion power company at market-competitive prices. This leading-edge business partnership exhibits the facility's commitment to advances in environmentally-friendly processes through tapping alternative fuel sources and reducing global warming.

**Corral Farm 6**

In addition to the facility's C&D processes, Corral Farms also boasts the ability to accept a considerably broad range of non-standard

waste, and several other progressive recycling programs. Its electronics recycling program charges nominal fees for the acceptance and processing of copiers, TVs, PC monitors, microwaves, and fax machines. The facility accepts hazardous waste including household batteries, cell phones, printer cartridges, oil filters and empty paint cans, and is also equipped to recycle aluminum/metal, corrugated cardboard, glass, newspaper, plastic bottles/jars, textiles, scrap metal and mixed paper.



Corral Farm 7

The C&D Materials Management Team visited Corral Farm on January 14, 2009. The site visit was conducted by Mr. Joel Port, the Project Lead for Tri-Opus Technologies.



Corral Farm 8



Corral Farm 9



Corral Farm 10

### Site #3: S.B. Cox Incorporated (PBR #546)


S.B Cox Incorporated (Cox) was established in 1963 and has since expanded to a full-service contracting company based in Richmond, VA. The company owns a fleet of vehicles capable of handling 20 - 70 ton contract loads, and is permitted by DEQ to conduct processing and recycling of C&D materials as well as landfill operations.



S.B. Cox 1

At its recycling site, Cox employs multi-million dollar C&D technologies that allow the facility to accept large volumes of diverse loads of C&D debris, and to methodically and rigorously sift and sort the materials. Cox prides itself on its high re-use yields and progressive off-site

transportation partnerships and systems, which ensure only minimal amounts of true C&D waste ever remain in a non-recycled state. That C&D waste that does remain is transported to its landfill facility on Taylor Road in Chesterfield County, VA.



**Address:** 901 Potomac Street  
Richmond, VA 23231

**POC:** Andy Vojtecky  
[a.vojtecky@sbcoxdemolition.com](mailto:a.vojtecky@sbcoxdemolition.com) (email)  
(804) 222-3500 (work)  
(804) 222-7837 (fax)

<http://sbcoxdemolition.com/>



S.B. Cox 2





S.B. Cox 3



S.B. Cox 4



S.B. Cox 5

Cox's operations cover the complete range of C&D debris, with a focus on material shifting and sorting. The only large-scale processing done on-site focuses on broken concrete, brick, and block debris, which is crushed and used for fill. Untreated lumber brought to the facility is returned to wood mills and used for mulch. Untreated drywall is taken to a compost facility and added to fertilizer for resale. Metals are not processed on-site. Rather all metals are sorted and shipped to off-site metal scrap dealers where the materials is reverted to an unmolded state and converted for other metals use. Likewise, plastics that result from C&D projects, namely plastic



S.B. Cox 6

drywall and painting buckets and other High-Density PolyEthylene (HDPE) waste, are transported to independent plastic recycling facilities, where the debris is cleaned and melted into reusable plastic. Cardboard waste is taken to paper mills where it is processed into paperboard.



S.B. Cox 7



S.B. Cox 8

To get an appreciation for the volume of materials managed at the Cox recycling facility, in the second half of calendar year 2008 alone the operation processed eight hundred eighty-two (882) tons of metal; two hundred forty-three (243) tons of cardboard; two thousand six hundred ninety-seven (2,697) tons of concrete, block and brick; five hundred six (506) tons of wood; eighty (80) tons of

drywall; and three thousand four hundred sixty-one (3,461) tons of ADC. Cox was able to recycle nearly forty percent (40%) of the material it processed in that six-month period.



S.B. Cox 9

Cox also owns and operates a salvage warehouse from which the company resells unique and salvageable items to include old brick, doors, radiators, bathtubs, sinks, mantles, iron work and other significant architectural items.

The C&D Materials Management Team visited Cox on January 23, 2009. The site visit was conducted by Mr. Joel Port, the Project Lead for Tri-Opus Technologies, and Jason Sparks, Assistant Project Lead.



S.B. Cox 10



S.B. Cox 11



S.B. Cox 12

#### Site #4: Ace Waste (PBR # Pending)

Ace Waste is a collector and processor of waste based in Reston, VA, that specializes in mixed C&D debris. The company has two facilities currently underway – one in Reston, VA in permitting and another in Chester, VA in operations. The company does not own or operate a landfill, thus they incur costs to transport and dispose of any materials that remain as a result of its recycling processes. This fact ensures Ace Waste is continuously arduous in ensuring the maximum amount of material is



Ace Waste 1

recycled. Ace Waste conducts its operations within a 70,000 square foot building that has been certified by the U.S. Green Building Council.

The materials the company recycles include aggregates, wood, carpet, wallboard,

metals, cardboard, paper, glass, textiles, plastics, and residual dirt. Concrete is processed on-site. Wood-based materials are processed into clean and dirty wood chips. Metal is separated on-site, and then sent off-site to various consumers of the sorted product. Plastic-based debris is compressed, bundled and sent off-site. Carpet processing is also conducted, one of the only examples we found of this kind of processing in the state. It is processed by a state-of-the-art station which was custom-made for Ace Waste. The intricate system processes both Face Fibers Nylon 6 and 66 at the rate of 1,000 tons per month. Both clean and painted drywall is also processed, after undergoing a testing process which determines if the drywall has been painted with a lead-based paint.

^
CEWASTE

**Address:** Main office  
1816 North Shore Court  
Reston, VA 20190

Chesterfield facility  
13101 N. Enon Church Road  
Chester, VA 23836

**POC:** Mr. Ken Mogul  
[ken@acewasterecycling.com](mailto:ken@acewasterecycling.com) (email)  
(703) 850-9549 (work)  
(804) 435-5519 (fax)

<http://www.acewasterecycling.com/>



Ace Waste 2



If it has not, the painted drywall recycled. All of its processed materials are either manufactured for wholesale or packaged for commodity markets.

In addition to recycling products, Ace Waste also has processes in place to sort and remove reusable materials, primarily for donation to charitable organizations.



Ace Waste 4



Ace Waste 3



Ace Waste 5

## ***Significant Observations***

Through our research, we discovered numerous trends and industry-specific nuances that help explain and define the way C&D materials management has developed and now operates in Virginia. We further learned of several process-related issues or concerns that influence the accuracy and availability of C&D material management information in Virginia. Understanding both categories of issues and their intricacies will ensure the DEQ's future initiatives and strategies for improving and expanding knowledge and operations of C&D materials management throughout the state are maximally effective.

## **Industry-Specific Learnings**

- Progressive, Proactive Approaches** – There is definitive evidence of progressive thinking and initiative being taken with regards to C&D materials management throughout Virginia, most noticeably in the more densely populated areas of the state, where solid waste facilities tend to experience both high volume and high frequency demands for C&D services. As they begin facing facility space constraints and life expectancy issues, these facilities are compelled to find state-of-the-art solutions to C&D debris management. In these areas, where real estate is premium-priced and in limited supply, facilities do not have the option of simply opening an additional cell or expanding a facility's acreage, and thus have more incentive to invest in processing and recycling technologies that maximize a fixed facility's lifespan and physical capacity, or re-use an existing facility (i.e. an old, closed landfill) for a new purpose (i.e. a transyclery, convenience center, or processing and recycling facility). While the extent to which facilities have committed to C&D materials management solutions varies, nearly all of the facilities that operate in urban areas have taken steps toward adopting processing and recycling technologies. Most have implemented, at a minimum, standard household materials recycling efforts, and many have started research and planning efforts for expanding into more advance C&D processing. Additionally, nearly all of the metropolitan area local governments have been proactive in developing specific policies, restrictions, schedules and processes for how best to handle C&D materials.
- Regional Solutions** – Many of the counties and cities we contacted did not operate stand-alone, locality-specific facilities, but instead participated in regional solutions to provide solid waste management including C&D acceptance and processing. In most cases the operations of the regional solutions are managed by an independent Authority or other government-sponsored or

private-operated independent entity responsible for the coordination and operation of the regional facilities. For example, the counties of Staunton, Waynesboro and Augusta have formed a cooperative arrangement for regional waste management and C&D debris acceptance at the Augusta Regional Landfill. Virginia's Southeastern Public Service Authority (VSPSA) is another progressive, regional operation that provides services to Chesapeake, Franklin, Isle of Wight, Norfolk, Portsmouth, Southampton, Suffolk and Virginia Beach. These are just two of the many regional solutions that have developed throughout the state. While regional operations do not specialize in C&D acceptance and processing, their mere existence expands the overall options residents and businesses have for disposing of C&D debris. Furthermore, regional solutions provide for economies of scale that lower costs and increase volume, which are incentives for regional operations to consider investment in C&D processing and recycling technologies.

- **Variances in Residential vs. Commercial Waste Handling** – There are far fewer facilities within the state that accept high-volume C&D waste from commercial grade projects than those that accept small-volume residential waste. Nearly all of the facilities in the state accept low-volume residential C&D waste. While the rules and restrictions vary from facility-to-facility, nearly every resident in the state has at least one local option for disposing of household renovation waste and debris. The most common rules-of-thumb for residential C&D are as follows:
  - a) Residents are responsible for transporting their own C&D waste (versus relying on the local government-sponsored collection service that handles standard household waste collection)
  - b) Residents are required to deliver the C&D debris directly to the nearest local or regional landfill (rather than a Convenience Center or Transfer Station)
  - c) Residential waste volumes should not exceed one (1) pick-up truck sized load per visit

In contrast, businesses and commercial projects have fewer options for disposing of C&D waste. Densely populated areas tend to have the most commercial C&D options, and even in the more urban areas, where construction and demolition projects are common and ongoing, businesses are expected to transport the materials greater distances to the larger regional centers that are better equipped to accommodate higher volumes of debris.

- **Tendencies Toward Acceptance Over Processing** – Of the C&D facilities that accept debris, a smaller percentage than is ideal actually process or recycle the material. We confirmed one hundred thirty-five (135) facilities throughout the state that accept C&D debris. Of those, sixty-one percent (61%) carry out some form of processing or recycling of the debris, but that number is highly skewed in that it includes all facilities that conduct any "sorting" of C&D. Most facilities, and especially transfer stations, conduct some minimal C&D sorting before transferring waste to its final destination. The percentage of facilities that actually apply involved technology for the purpose of reuse and recycling of C&D is far fewer.
- **Disparities in C&D Knowledge & Understanding** – We observed that awareness levels on what C&D materials are and what C&D Management is differ greatly based on region and job role. In general, the personnel who own or operate solid waste facilities are familiar with the term C&D, and are well versed in the spectrum of C&D materials management processes. Familiarity with the term C&D and the concept of C&D materials management differed far more greatly within the county and city offices. Those Supervisors, Managers or Directors of Solid Waste Management, Refuse and Recycling, Landfill or Public Works divisions of government offices were also familiar with the term

C&D and the concept of C&D materials management, but to a slightly more varied degree dependent upon how much or how little that locality conducted C&D operations. However, at the County Administrator or City Administrator level, the term C&D is not well known, and the concept of C&D materials management is relatively foreign. This poses a significant challenge for DEQ in its goal of providing better information to Virginia residents and businesses. A resident or business in need of local information is far more likely to contact the County Administrator or City Administrator for assistance, the contact *least* knowledgeable on the topic, than to seek out and contact the specific division or department head. Through our call surveys, we experienced first-hand numerous instances where, even after careful and thorough explanation of C&D as a concept and our intention for calling, we were forwarded to offices ranging from Building Inspections to Community Recycling Advocacy to Office of Revenue.

- Influences from Broad Economic Trends** – The general downturn in the United States' economy in 2007/2008 has affected C&D operations and C&D investment decisions throughout Virginia in several ways. First, many facilities that carry out standard household waste recycling (paper, plastic, and aluminum) are currently unable to cover the costs of doing so, due to lower than normal demand and depressed fair market values (FMV) for its recycling byproducts. These losses have resulted in many facilities delaying any possible considerations to expand their processing and recycling operations to include C&D. With investment costs ranging from \$4M to \$6M to convert an existing facility into a state-of-the-art C&D processing and recycling center, operators are hesitant to commit to those expenses when related demand and profits are on a current decline. Second, far fewer construction and demolition projects, in general, are underway, thus the volume of C&D debris that is being produced as a result has lessened greatly. As a result, the facilities that perform any kind of processing or recycling (versus disposal only) have cut-back operating hours and staff. While the facilities have tended not to reduce their intake hours, they are conducting processing fewer days per week. In addition, because fewer construction projects are underway, the demand for C&D recycling by-products that are typically purchased for use in new "green" buildings and infrastructure projects has decreased. This has reduced operating revenues, and thus put pressure on a facility's ability to cover the costs of C&D processing & recycling operations. For example, the Fauquier County-operated Corral Farm C&D facility has experienced a decrease in gross tonnage intake over the last three (3) years, and a corresponding overall operating revenue decline from \$5.4M to \$1.2M. As a result they have also been forced to reduce their processing operating hours.
- Variances Between Rural and Urban Areas** – While facilities in urban areas have tended to be fairly progressive in their commitments to C&D material management, the rural areas in Virginia tend to lag far behind. There are two primary factors that influence the difference in how C&D materials management is treated in rural areas versus urban areas: C&D debris volume, and land/resource availability. Rural localities throughout Virginia tend to lack any formalized C&D materials policies or processes, presumably due to the infrequent need and low demand for disposal of commercial-volume C&D debris in those areas. Our observations are that rural facilities have few if any restrictions on the materials they are willing to accept, and address C&D disposal needs on a case-by-case basis if/when needed. Because the volume and frequency of C&D disposal is so low, there is little pressure or incentive for rural areas to implement more robust C&D processing policies or invest in processing technology. Rural areas also tend to have far more land acreage available for disposal, and thus are not immediately concerned with addressing facility capacity issues or the impacts to capacity that large-volume C&D debris loads have.



- Inconsistencies in Facility References** – Although DEQ identifies C&D facilities by Permit Number and formal Name to which the Permit Number applies, there is often a disconnect in how C&D facilities are named or commonly referred throughout the state. In many cases a facility is often known by one or more different names. Many facilities are known by a local nickname that a person, unless he or she has been a long-time member of the community, would not know. For example, the New River Resource Authority Solid Waste Facility is also locally known as Ingles Mountain Landfill. Facilities are referred to often by their location or geographic area served (i.e. the Concord Regional Landfill is also known as the Region 2000 Landfill or the Concord Pike Landfill), the previous name or local nickname of the landfill (i.e. Highland County Landfill is also known as The Old Landfill), or the management company that operates the landfill (i.e. Ivy Materials Utilization center is also known as Rivanna Solid Waste Authority). Further multiplying the problem is that the facilities themselves, from time-to-time, opt to rename their operation due to acquisitions, restructuring, or rebranding efforts. Finally, in a growing “virtual” world, this problem is exacerbated when citizens or businesses opt to utilize the internet as an information source. The growth of the internet means yet another data source that becomes outdated easily. Unfortunately, many government and facility websites perpetuate the confusing, duplicative and contradictory naming conventions in existence; and even further complicate the problem when not kept up-to-date.

This makes it more challenging for DEQ and local and regional government entities to consistently provide accurate public information, thus causing confusion. While DEQ may refer a person to a facility by way of its Permit Number and formal name, if a county or city office or website refers to the same location by way of its local nickname, a resident may become frustrated or confused by the seemingly and unintentionally contradictory information.

- Acquisitions & Vendor Changes** – One of the ongoing issues that cause confusion in tracking and maintaining accurate listings of C&D materials management facilities is business acquisitions and changes in the vendors that support public entities. Similar to other industries, over the past two decades the solid waste management industry has experienced some consolidation and privatization. For example, BFI was acquired by Allied Waste Industries, Inc., a large private operator in Virginia, in 1999. However, ten years later Allied Waste-operated facilities that were once operated by BFI are still known as and referred to as “BFI” facilities. As a result, residents and businesses that are referred to a “BFI” facility or reference a directory that lists a BFI facility may have difficulty locating a facility or finding accurate information about it. Other industry acquisitions, both past and future, would have similar effects.

In that same vein, confusion is also created when the contract of a particular vendor contracted to carry out the operations of a publicly-owned facility expires, and the operations are assumed by a new vendor. As established previously in this report, C&D and other solid waste sites are commonly referred to by the name of the management company, rather than the name of the facility. As the contracts to provide those facilities are transferred, the public remains largely unaware of the change, thus common or local facility names and any in-print directories that make vendor references in the site name become outdated and confusing.

### **Process-Related Learnings**

- Multiple Approaches Uncovered New Information** – Taking two complementary approaches to collecting information (i.e. a facility view and a locality view) was instrumental in gathering a more

complete picture of the C&D materials management network within Virginia. Had either activity been conducted alone, over fifty (50) facilities would have been overlooked. Additionally, by gaining a “second point of view” on most facilities, we were able to validate contradictory or confusing information, and augment our data collected through one of the two activities. This highlights the fact that the enclosed C&D directory, while complete in terms of the exhaustive research that was carried out, is most likely still not reflective of the entire gamut of C&D operations within the state. Each new avenue used to solicit C&D operations information is likely to uncover additional facilities and companies. The DEQ took a smart and worthwhile approach in requiring more than one avenue for collecting data. For future data collection efforts, a similar multi-faceted approach should be employed.

- **Duplicative Requests for Information** – There is a significant amount of frustration experienced by the Supervisors and Managers of C&D facilities in responding to surveys and data requests, in that there is a perception they are asked to provide the same information over and over. While public facilities and some private enterprises are *willing* to provide the information we requested while conducting our survey, many of the respondents voiced that such requests are duplicative, inefficient, and wasteful in that “DEQ already knows the answers to this stuff.” Over time, this perception has made Supervisors and Managers of sites less eager to return phone calls, less concerned with the accuracy of the information they provide, and less confident that the time they invest in providing accurate information is worthwhile, thus decreasing their willingness to provide the information again in the future.
- **Private Enterprise Awareness** – In general, local government entities are not intimately familiar with the private enterprises serving their jurisdictions in providing C&D materials management services. In our research, the various representatives we spoke to at the county and city level were extremely knowledgeable of the public-owned and operated facilities they are responsible for, but had limited knowledge of the private enterprises operating in their jurisdictions. As such, those counties and cities could fairly easily make recommendations to their citizens and businesses on the appropriate public facilities to utilize for C&D materials disposal, but had limited information to dispense to their constituents about private enterprises offering similar services. Presumably, part of the disconnect is due to the fact that private operations are permitted at the state level, rather than the local level, thus there is no closed loop in information flow between the private enterprises and their local government offices. Another explanation may be the difference in target customer base each entity is predominantly interested in. While local government offices showed a tendency for prioritizing residential waste over private business waste (including private construction and demolition company waste), private enterprises tend to be interested in high volume C&D waste produced by private construction and demolition companies. As such, there is no immediate incentive for or synergy created from private C&D materials facilities and local government entities establishing knowledge of and relationships with each other. As a result, our locality call survey produced far fewer “new and undiscovered” private C&D materials management facilities than may have been expected. That is not to say they do not exist, only that the best source for information on new or emerging private entities is likely not the city or county government offices for the localities they operate within.
- **Competition and Information Protection** – There is a strong tendency, especially within the private sector of the C&D industry, to be protection of sharing information. Given the long investment times and significant investment costs of establishing a privately-owned facility for C&D materials

processing and recycling, it comes as no surprise that numerous private enterprises consider the information and statistics they have about their operations to be one of their competitive advantages. Numerous private enterprises that we contacted were unwilling to provide the information we requested, citing sensitivity and confidentiality of the data as their reasoning. As such, some of the private enterprises we did identify are lacking the full and detailed directory listing we were able to provide for most public establishments.

## C&D DIRECTORY

### ***Purpose***

The direct, tangible result of our research efforts is an Excel-based C&D Materials Management Markets Database (*PPG RCC C&D Project Report 1 2009\_FINAL.doc*) – a directory of C&D facilities throughout Virginia. The database includes two (2) spreadsheets that provide two distinct views into the network of C&D materials management services available to Virginia citizens and businesses, and has been formatted for easy upload to DEQ's website for access by the general public.

- **Facility Details (Sheet #1)** – Provides an alphabetical listing of each known, active C&D facility operating in Virginia. The spreadsheet includes one record per facility, with multiple columns that contain details about the facility, its operations, its C&D processing statistics and its default C&D qualification. This list includes *both* sites that run the full gamut of C&D processing, from those that take minimal residential volumes and conduct no processing of any kind to those that are full-scale C&D processing and recycling centers. The “Default Services Qualification” and “Other Qualifications & Notes” columns are the easiest way to distinguish where each facility lies in the spectrum. Those few facilities that are full-fledged C&D dedicated operations are highlighted in green. The spreadsheet can be filtered and sorted, based on the information the reader is attempting to find. Data provided for each facility includes:

- |                                |  |   |
|--------------------------------|--|---|
| ○ Facility Name                | ○ POC email address                              | ○ Annual Tonnage  |
| ○ Pseudonyms                   | ○ Facility / Locality website (where applicable) | ○ Tipping Fees  |
| ○ Permit By Rule (PBR) Number  | ○ Location Address                               | ○ On-Site Management / Processing designation             |
| ○ Public / Private designation | • Street   | ○ Percentage of C&D Materials Sent Off-site for Recycling |
| ○ Expected Life of Facility    | • City   | ○ Default Services Qualification                          |
| ○ Geographic Area Served       | • Zip Code                                       | ○ Other Qualifications & Notes                            |
| ○ Region Served                | ○ Hours of Operation                             |   |
| ○ POC Name                     | ○ Materials Accepted                             |   |
| ○ POC Phone Number             |  |   |

- **Locality Details (Sheet #2)** – Provides a listing of each County and City in Virginia, organized alphabetically by Region. The spreadsheet includes one record per county or city, with several columns that contain details about the locality and the C&D facilities that serve that locality. The spreadsheet can be filtered and sorted, based on the information the reader is attempting to find. Data provided for each facility includes:

- |                 |                     |                              |
|-----------------|---------------------|------------------------------|
| ○ Region        | ○ Locality Name     | ○ Locality POC Number        |
| ○ Locality Type | ○ Locality POC Name | ○ Sites Serving the Locality |

***Directory File***